



NWS Alaska Region: Strategic Planning to Meet Emerging Arctic Maritime Operational Challenges



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Regional Director**



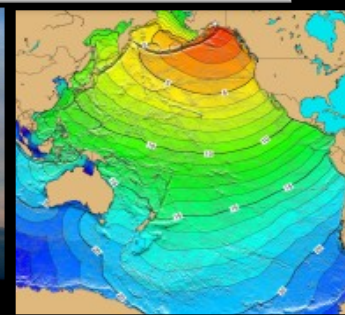
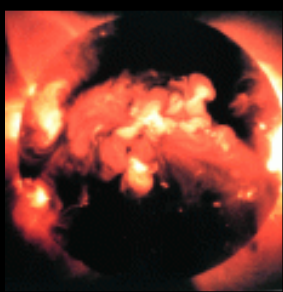
Outline

- Thanks!
- NWS Alaska Region
- Operational Challenges
- Gaps and Impacts
- Stories – Impacts of Diminishing Sea Ice
- Weather Ready Nation: EvolveNWS-Alaska
 - Arctic Test Bed and Proving Ground
 - Alaska Environmental Science and Service Integration Center (AESSIC)



Service Programs

- Aviation
- Climate
- Fire Weather
- Marine Weather and Sea Ice
- Public Forecasts and Warnings
- Rivers/Hydrology
- Space Weather
- Tsunami
- Volcanic Ash





Gaps and Impacts

Gaps

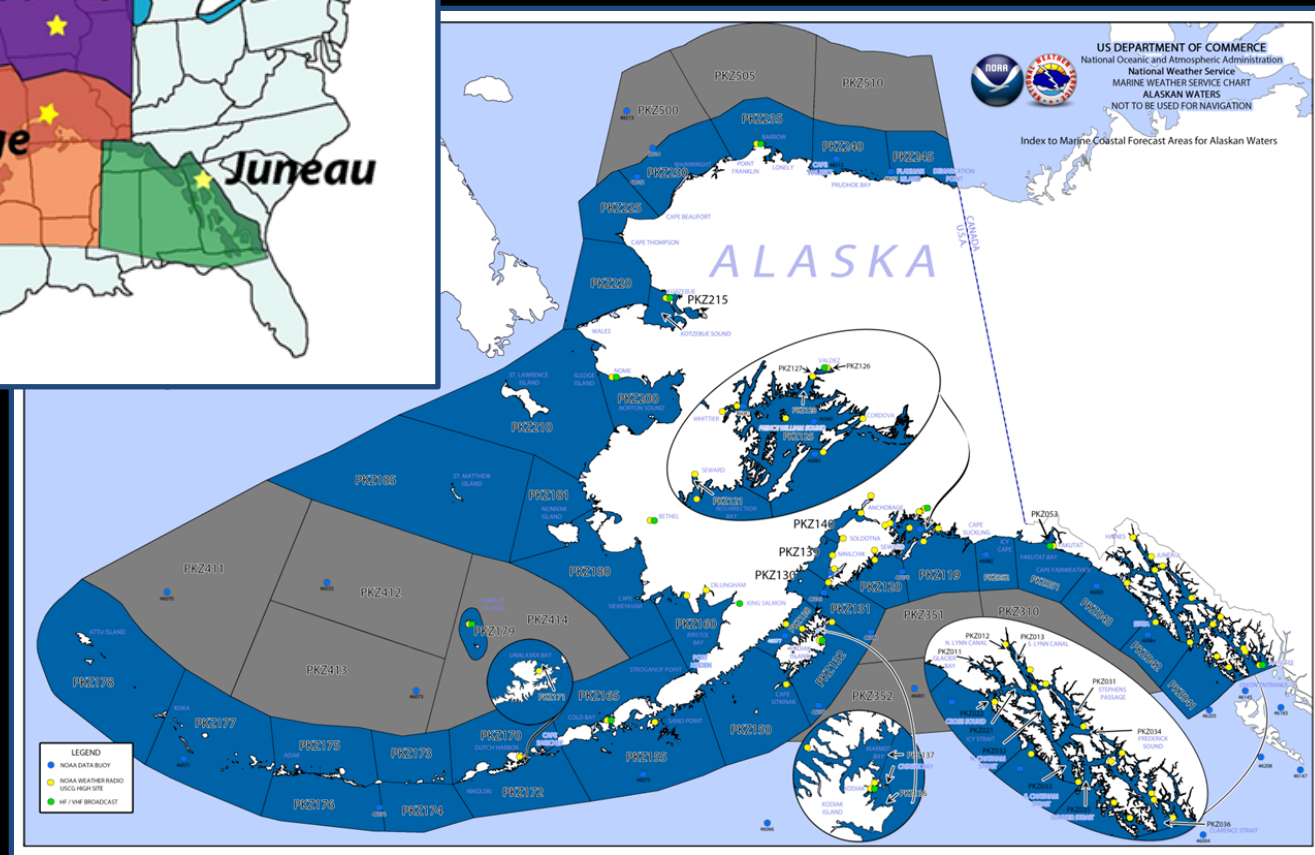
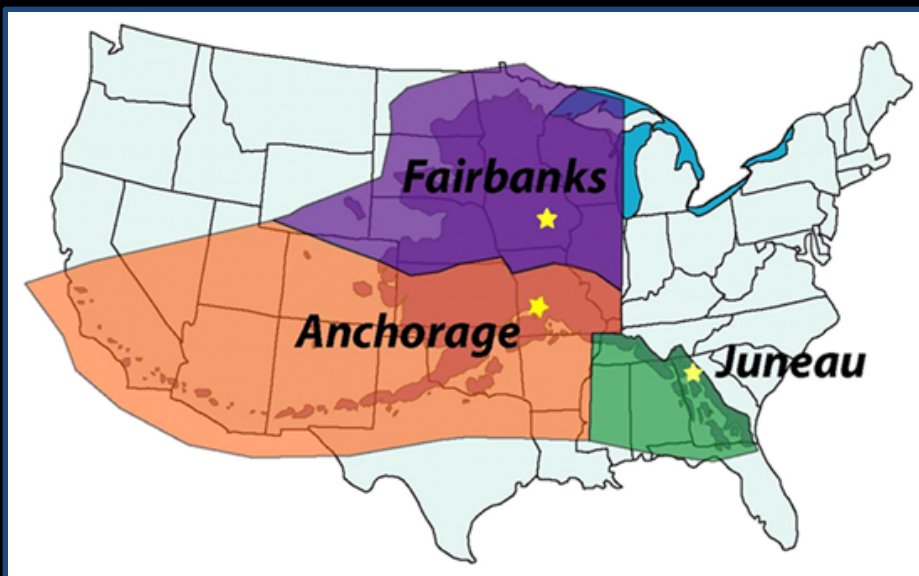
- Surface and maritime (both wave and ice buoys)
- Network radar
- Upper air (atmospheric soundings)
- Lightning
- Coastal water level gauges (NWLON, etc.)
- Stream (river) gauges
- Climate Reference Network (CRN, HCN)
- Snow depth and precipitation gauges
- Volcanic ash
- Upstream...

Impacts

- Situational Awareness
- Model performance
- Bias correction



NWS Alaska Operational Challenges





Impacts of Changing Ice Conditions in Alaska

S/V Altan Girl - July 2014



May 30, 2011 - Sea Ice
Kotzebue, AK structure damage



Kotlik –November 2013 Fall Storm



November 2013 protection in Golovin built days
before storm impacts

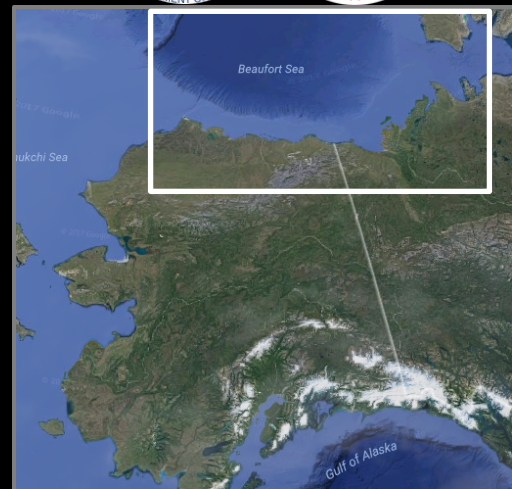


Shishmaref, AK Coastal Erosion



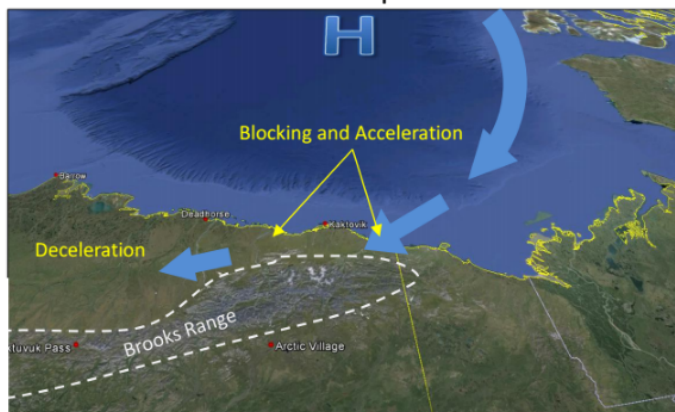


Sea Ice Impacts on Aviation – March 2016

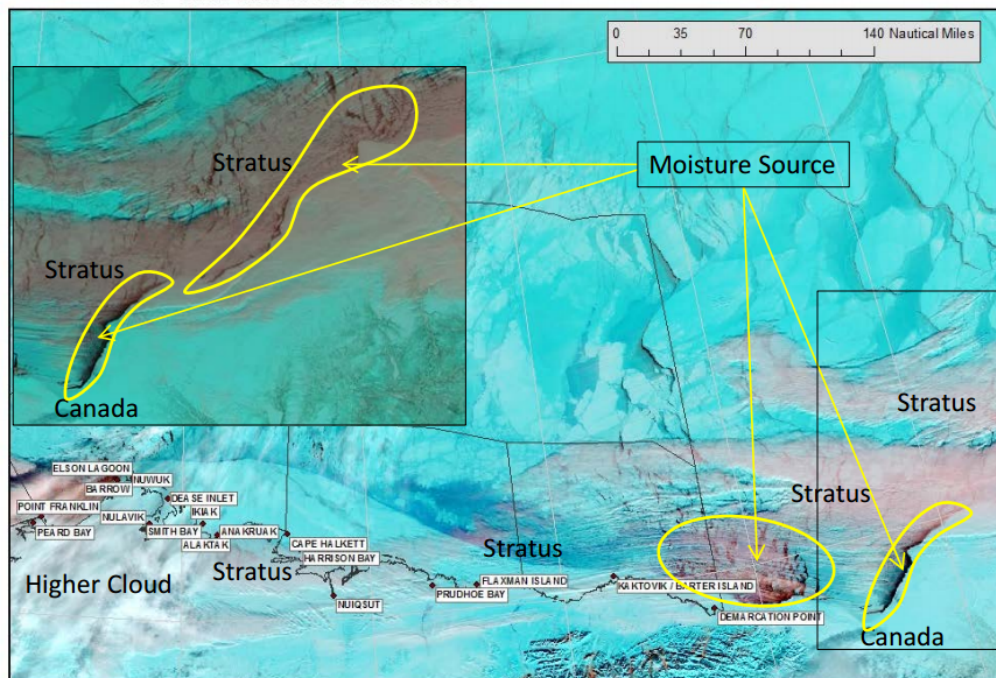


General Flow March 4-8, 2016

Northern Alaska terrain and impacts on low level air flow



SNPP False Color Satellite Imagery
07 March 2016 at 2133Z



Satellite Imagery Courtesy UAF/GINA <http://feeder.gina.alaska.edu>

Pertinent Pilot Reports for Deadhorse March 7, 2016 16-2359Z

SCC UA /OV SCC /TM 1718 /FLUNKN /TP C212 /SK SCT008-TOP014 /TA M18 /TB LGT CHOP /RM DURC NBND OBSC TOP008 FV AS ADVERTISED=

SCC UA /OV SCC /TM 2100 /FL006 /TP C208 /SK OVC-TOP006 /WX FV02SM /TB NEG /RM DURD RWY 5=

SCC UA /OV SCC /TM 2140 /FL007 /TP DH8A /VV 06040KT /RM DURD RWY 5/HEADWIND DECREASED BELOW 700 FT=

SCC UA /OV SCC /TM 2258 /FL019 /TP C208 /SK BKN019-TOP020 /TB NEG /IC NEG /RM DURD RWY 5/VERY THIN LVR/AD IN SIGHT 3SM=

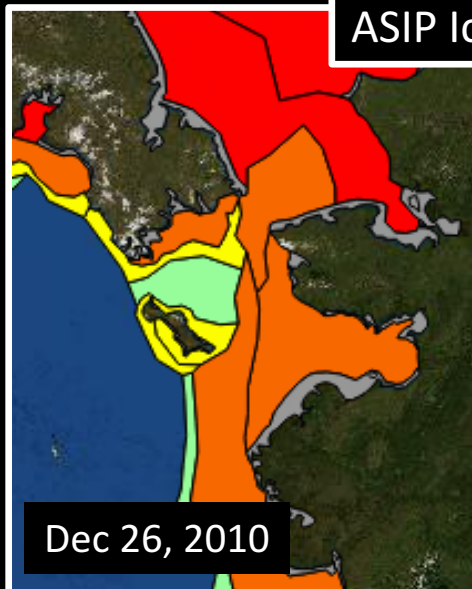


Impacts from a Lack of Sea Ice – Jan 2011 & 2017

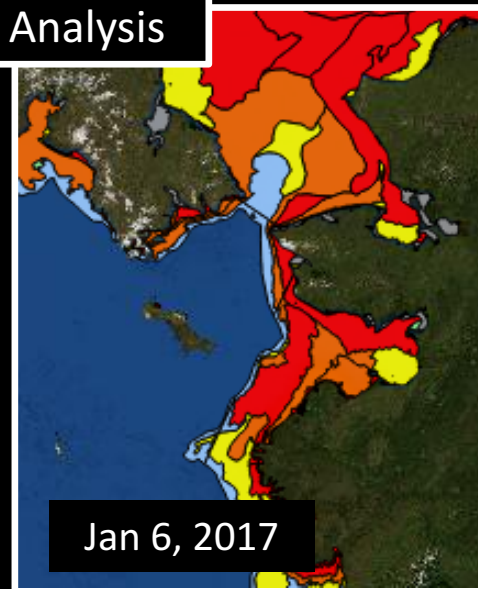
Savoonga, January 2011



ASIP Ice Analysis

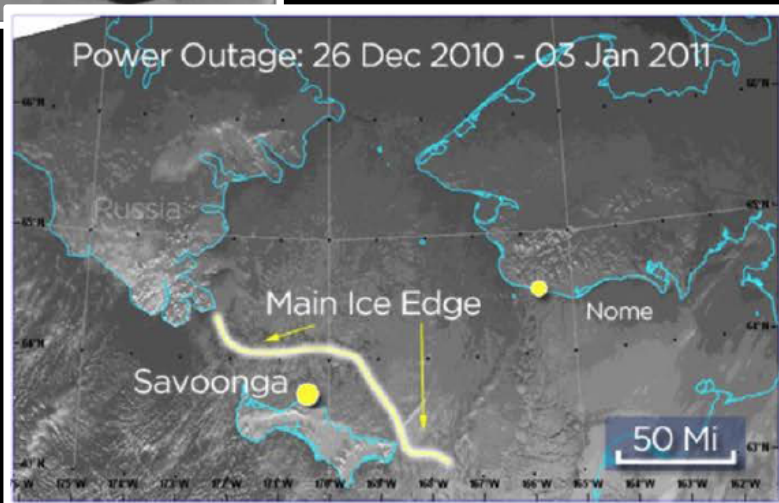


Dec 26, 2010



Jan 6, 2017

Power Outage: 26 Dec 2010 - 03 Jan 2011

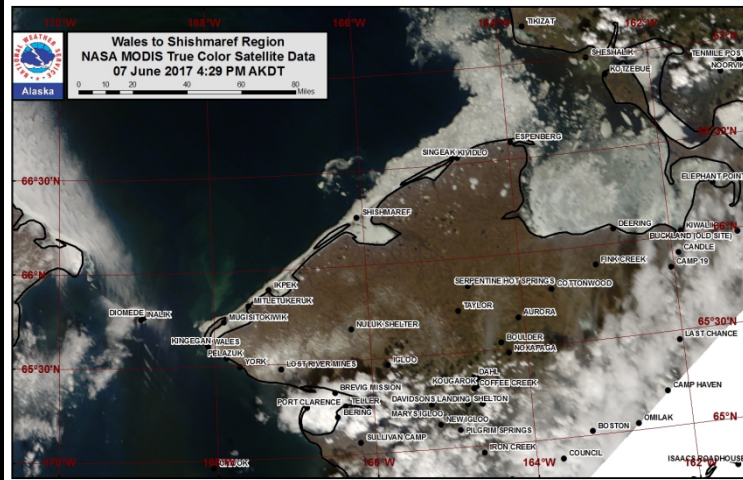


“The extreme cold caused the salt spray to freeze on electrical equipment. Initial outages were caused by line slap from iced-up conductors, but later problems were caused by electrical arcing through conductive salt. The lack of sea ice was a major contributor to this situation.”

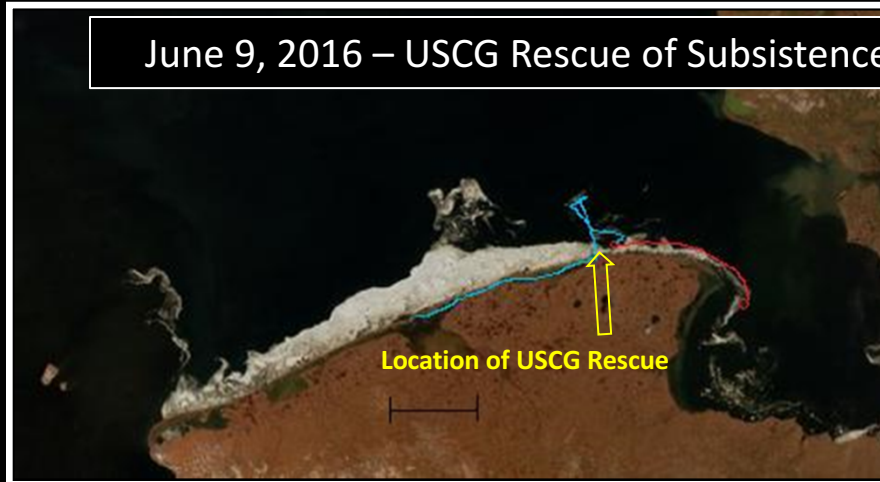
-Meera Kohler, Alaska Village Electric Cooperative



Supporting Indigenous Alaska Communities



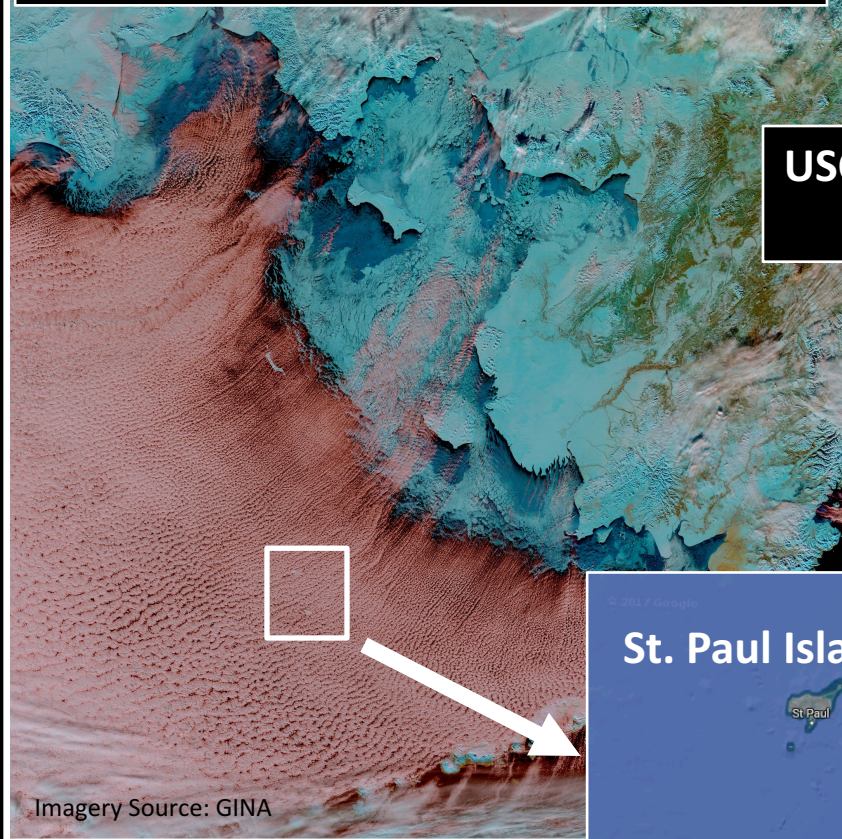
June 9, 2016 – USCG Rescue of Subsistence Hunters in Shishmaref, AK





Freezing Spray Impacts on Vessels

SNPP VIIRS False Color – February 10, 2017



Imagery Source: GINA

USCGC Morgenthau searching for F/V Destination



Imagery: USCG



Imagery: USCG

St. Paul Island



Emergency Beacon
Location



St. George Island

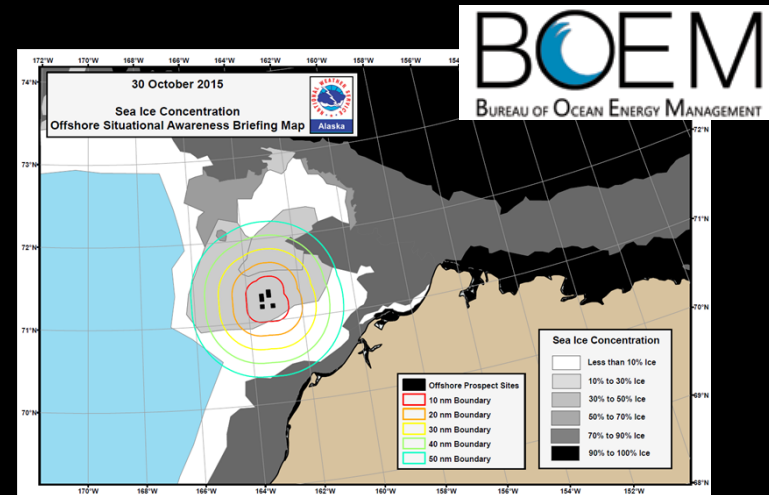
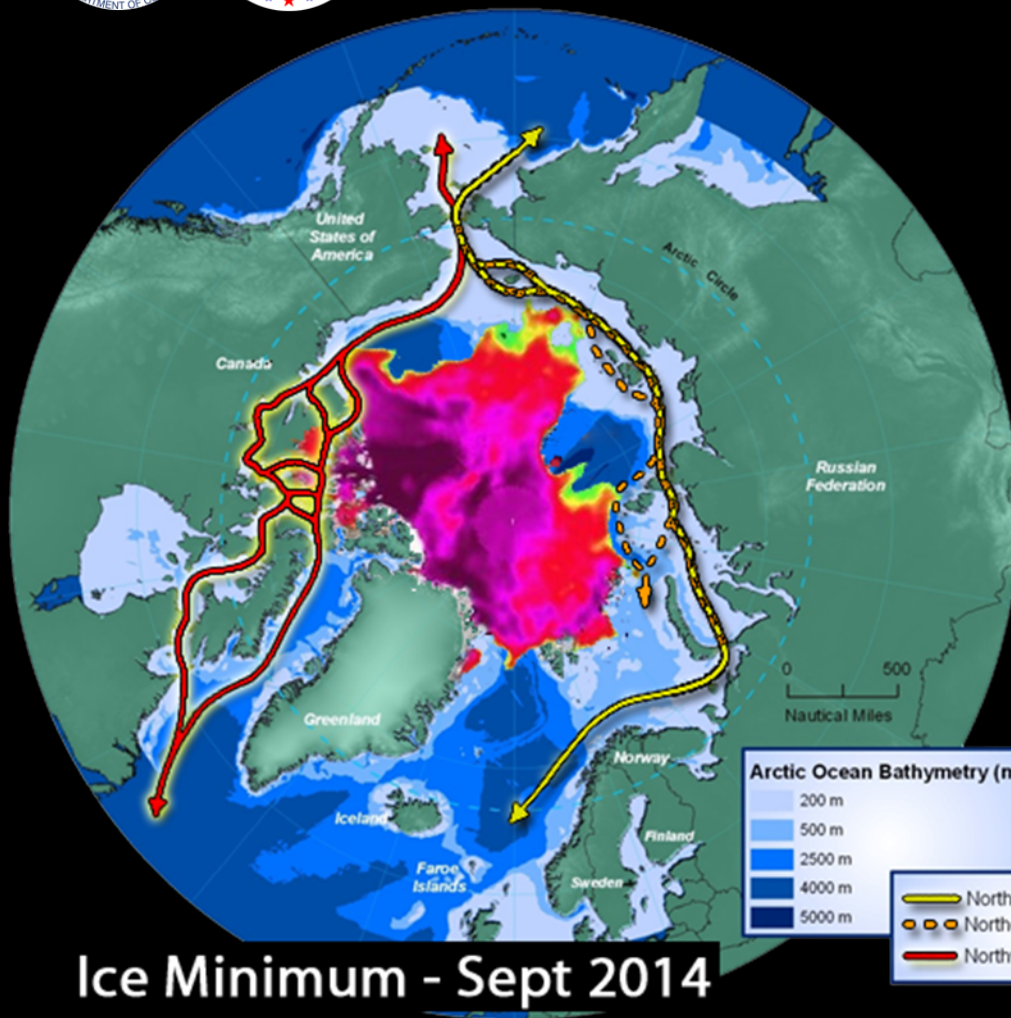
Imagery: Google Earth



Freezing Spray, accumulated beyond the ice edge



Increasing Arctic Marine & Industry Traffic





NWS Alaska supported by many core partners



Increasing interest & activity in the Arctic will bring many new emerging customer requirements





NWS Evolve



NWS Vision:

Weather-Ready Nation: Society is prepared for and responds to extreme weather, water, climate events

The vision is realized through the NWS mission: **Provide forecasts and warnings for the protection of life and property and to enhance the national economy**

To realize the full value of our mission and to Evolve the NWS, NWS will:

Deepen our service to core partners: Testing and implementing the Operations and Workforce Analysis (OWA) recommendations through the NWS Program Management Office (PMO)

Enhance our science and technology capabilities: Advance NWS infrastructure, science, and technology to the “cutting edge” (e.g., next generation modeling and data assimilation systems)

Engage strategically with and grow the broader enterprise: NWS fosters partnerships at all levels, proactively harnesses external advances that benefit the mission, and enables the enterprise to grow



NWS Evolve



- **Simpson (1993) – An accurate forecast has little or no intrinsic value if that information does not influence the customer’s risk management/decision making process**
- **Provide Impact-based Decision Support Services (IDSS)**
- **In Alaska - It’s about building community resiliency in the face of increasing vulnerability to extreme weather: Be *“Ready, Responsive, Resilient”***

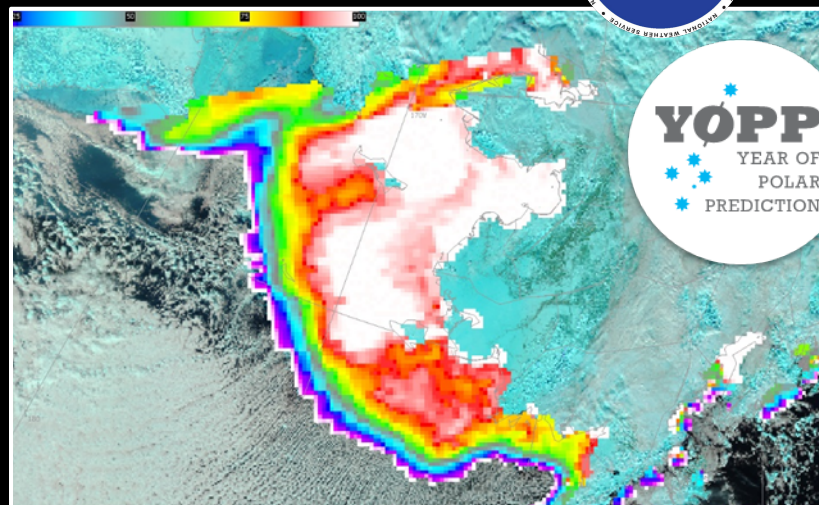


NOAA Arctic Test Bed

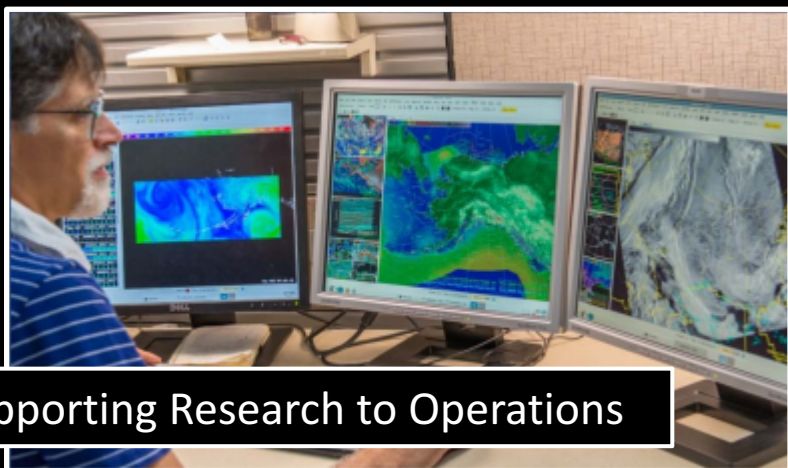


Vision Statement:

NOAA's Arctic Test Bed ensures that relevant operational scientific and technology advances are made to support the mandates of our core partners with weather, water, and climate information and predictions and associated impacts related to the people, infrastructure, and environment of Alaska and the Arctic.



SNPP-MIRS sea ice product evaluation
with GINA – Spring 2017



Supporting Research to Operations

Sea Ice Model Verification Project

- Evaluation of GOFS 3.1 & RIOPS
- Working with partners at Canadian Ice Service & National/Naval Ice Center



Alaska Environmental Science Services & Integration Center (AESSIC)



Automated Upper Air systems will allow the AR to “repurpose” positions to build out the Alaska Environmental Science and Service Integration Center (AESSIC), The AESSIC will:

- Ensure more consistent and coherent science and services across internal NWS programs
- Allow NOAA (NWS, NOS, NMFS, OAR) to better meet the current and emerging cross-cutting needs of partners, customers, and stakeholders in Alaska, as well as those that operate in the Exclusive Economic Zone in the waters surrounding Alaska (e.g., HAB forecasts, impacts to fish stocks, etc.)
- Enhance integration of interagency science and service delivery (e.g., USGS, BOEM, BSEE, NPS, BLM, USFS, NASA, EPA, etc.) to address impacts (e.g., ecological) in the Arctic and quantify the economic value chain
- Develop culturally sensitive social science services, integrate Traditional Environmental Knowledge (TEK) into NWS operations, and develop integrated service outlets in remote Alaska locations (Polar Knowledge Canada) focusing on STEM activities



Questions?

